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Serial Number_____

TM-87916 Rev. A

PA03 SIGNAL CONDITIONER INSTALLATION AND OPERATION MANUAL

EG&G Flow Technology
4250 East Broadway Road
Phoenix, Arizona 85040

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WARRANTY

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IMPORTANT

Should you require service of your EG&G Flow Technology manufactured equipment, please contact our service department at International Code (01) (602) 437-1315. You will be given every possible assistance over the telephone. Should your unit require factory service, whether in warranty or after the expiration of the warranty period, our service department will issue a Return Authorization Number which will be the starting point of our fast and efficient service. After your unit reaches our factory, it will be promptly repaired or replaced and will be returned to you within the shortest possible period of time.

NOTE

Please do not return equipment without a Return Authorization Number.

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1.0 SCOPE

This manual is provided for information and guidance of personnel responsible for the installation and operation of the PA03 Signal Conditioner manufactured by EG&G Flow Technology of Phoenix, Arizona.

2.0 PURPOSE

The purpose of this manual is to provide information detailing the operational characteristics of the PA03 Signal Conditioner and includes information for wiring connections for the various applications.

This manual does not contain information or instructions for custom application(s).

3.0 DESCRIPTION

The PA03 Signal Conditioner is a solid state electronic package designed to transmit the output signal of a turbine flowmeter over distances greater than 1000 feet. The unit will also amplify a flowmeter output signal in an environment that is characterized by high electrical noise generated by electrical devices.

The PA03 Signal Conditioner converts the input signals from the flowmeter to a pulse output whose frequency is proportional to the rotation of the flowmeter rotor.

The PA03 Signal Conditioner is packaged in a 3½ inch diameter explosion-proof enclosure, NEMA 4X, or a polypropylene. Refer to Section 4.2 for further information. All connections are made to the terminal strip.

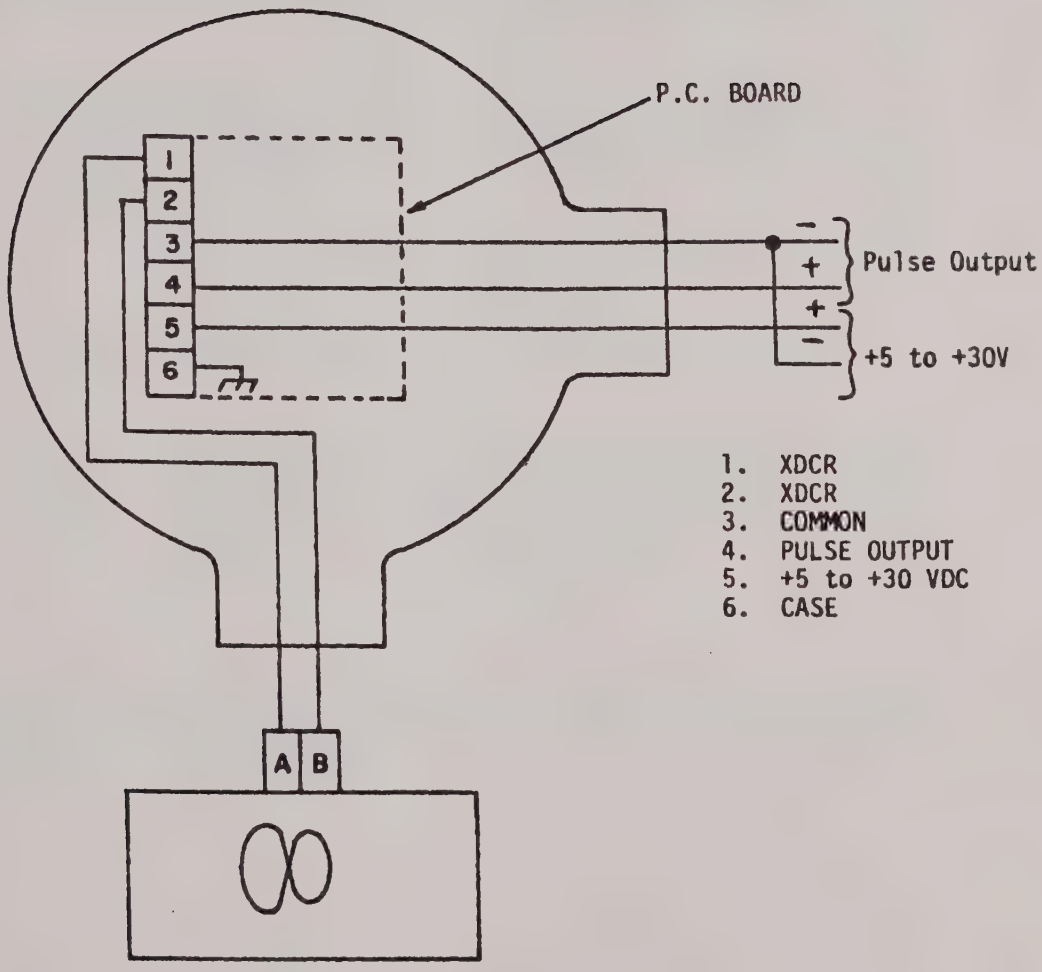


Figure 1. PA03 Wiring Diagram.

4.0 OPERATION

The PA03 Signal Conditioner provides a low level signal to an amplifier. The low level signal is amplified and converted to an output pulse signal whose frequency is proportional to the rotation of the flowmeter rotor. The output is buffered and the output pulse level is selectable.

C A U T I O N

DO NOT remove the cover of an explosion-proof enclosure located in a hazardous area while power is applied.

5.0 INSPECTION AND INSTALLATION

5.1 INSPECTION

The equipment is ready for immediate installation upon receipt. However, the unit should be checked to assure that no damage occurred during shipment. At least, a visual inspection for broken or loose components should be conducted.

5.2 INSTALLATION

Figure 2 shows the different enclosures for the PA03. The explosion-proof housing can be mounted on top of the flowmeter or on the end of the conduit. All connections are made to a terminal strip.

6.0 SPECIFICATIONS

A description of the Model Numbering System, Table 1 is provided in this Section.

Power Requirements:	+5 VDC to 32 VDC at less than 30mA, reverse voltage protected
Signal Input:	
Frequency Range	0 to 10K Hz
Sensitivity	10mV peak-to-peak at 5VDC power input
Signal Output:	
Impedance	2.2K ohms
Output Level	Pulse output level selectable with one resistor

Environmental:

Temperature Range	
Operating & Storage	-40 to +85°C (-40 to +185°F)
Humidity Range	
Operating & Storage	5 to 95%, Non-Condensing

Enclosures (Refer to Figure 2):

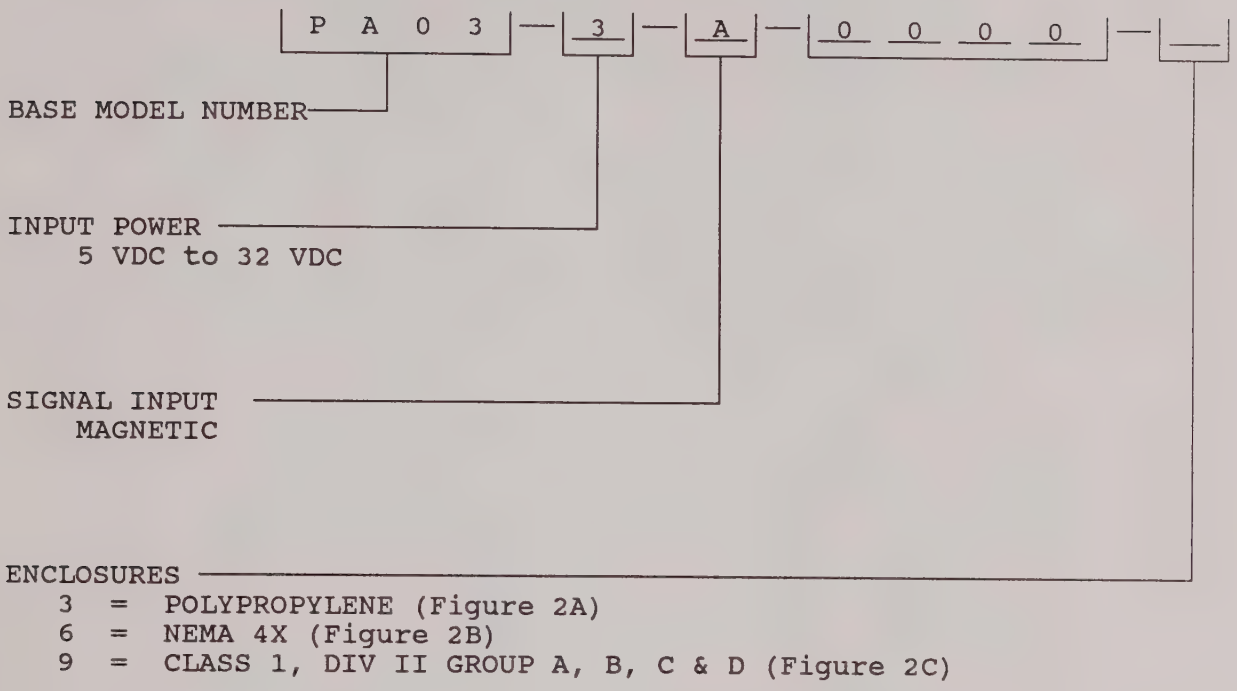
Polypropylene

NEMA 4X

Class 1, Div II, Group A, B, C, & D

TABLE 1

PA03 MODEL NUMBERING SYSTEM


P A 0 3 — 3 — A — 0 0 0 0 —
BASE MODEL NUMBER
INPUT POWER
5 VDC to 32 VDC
SIGNAL INPUT
MAGNETIC
ENCLOSURES
3 = POLYPROPYLENE (Figure 2A)
6 = NEMA 4X (Figure 2B)
9 = CLASS 1, DIV II GROUP A, B, C & D (Figure 2C)

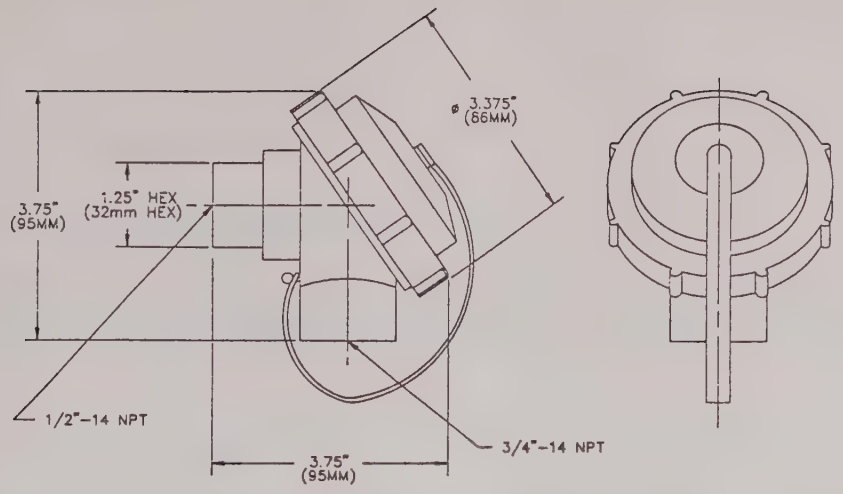


Figure 2A. Polypropylene

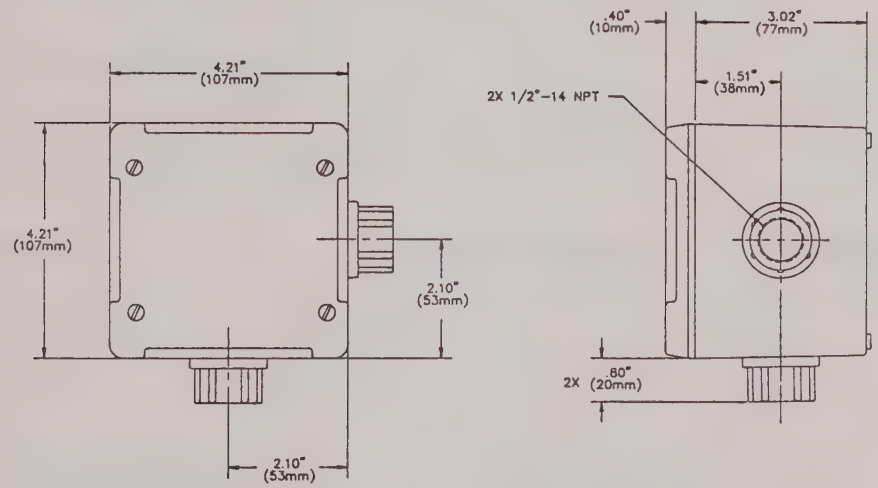


Figure 2B. NEMA 4X

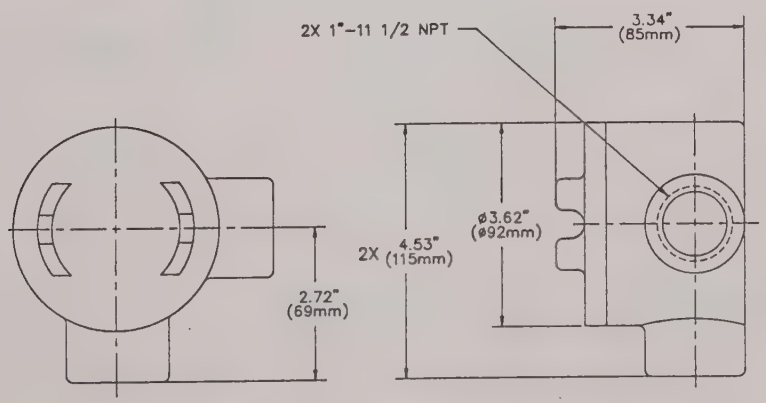


Figure 2C. Explosion Proof

Figure 2. PA03 Enclosures.

7.0 MAINTENANCE

7.1 PERIODIC MAINTENANCE

There is no maintenance required for the PA03 units. Cleaning normally associated with electronic equipment is recommended on an as-needed basis.

7.2 SPARE PARTS

It is recommended that one Printed Circuit Board, EG&G Flow Technology Part Number 84-12715-101, be maintained as a spare part for each unit in service.

7.3 TROUBLESHOOTING

Determine if the defective component is the magnetic pickoff or the printed circuit module.

SYMPTOM	PROBABLE CAUSE	REMARKS
No sine wave at T1 and T2.	No input from flowmeter.	Check flowmeter pickoff.
No saturated sine wave at pin 1 of U1A.	Amplifier U1A has failed.	Replace U1
No pulse output at pin 7 of U1B.	Schmitt trigger has failed.	Replace U1
No pulse output at T4.	Transistor Q1 is defective.	Replace Q1
	OR	
	External load shorted.	Check external load.

7.4 SCHEMATIC

Figure 3 shows the schematic and Figure 4 shows the component layout for the PA03 Signal Conditioner.

8.0 THEORY OF OPERATION

The PA03 Signal Conditioner consists of an input signal operational amplifier and an output buffer. The input amplifier accepts the low-level signals from a magnetic type flowmeter pickoff with both leads floating. The pulse output is isolated from the load with transistor, Q1. Transistor, Q1, also serves as a buffer to provide more output drive to the load.

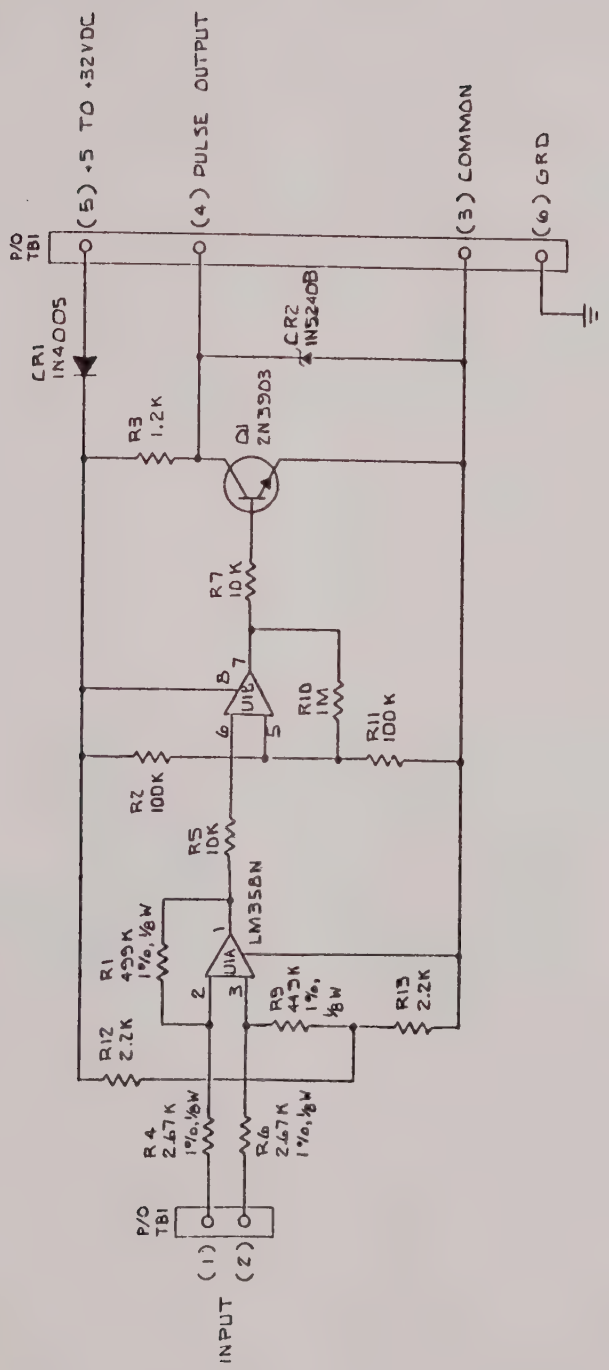


Figure 3. PA03 Signal Conditioner Schematic.

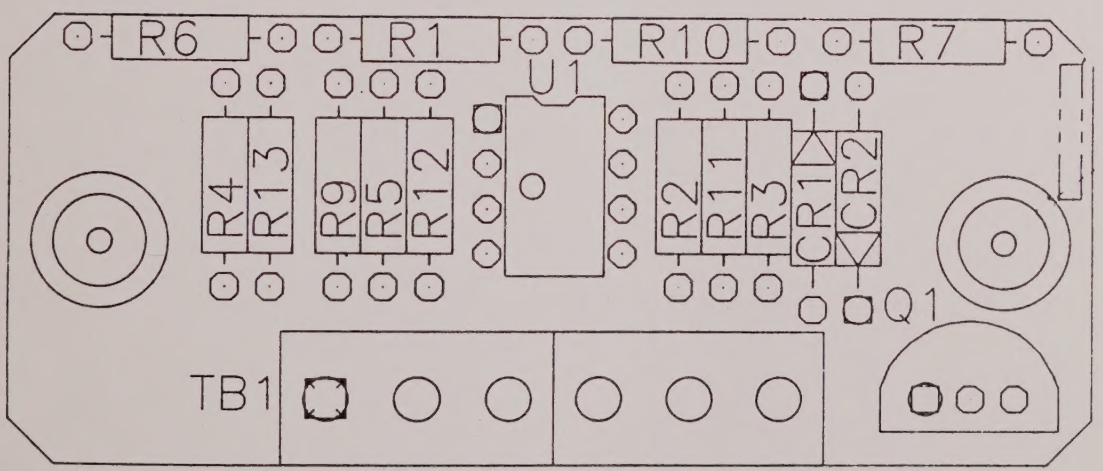


Figure 4. Component Layout.

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